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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/827,424	04/20/2004	Yuu Inatomi	43888-314	2569
7590 12/22/2010 MCDERMOTT, WILL & EMERY 600 13th Street, N.W. WASHINGTON, DC 20005-3096				
EXAMINER				
CONLEY, O'K				
ART UNIT		PAPER NUMBER		
1726				
MAIL DATE		DELIVERY MODE		
12/22/2010		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/827,424

Applicant(s)

INATOMI ET AL.

Examiner

HELEN O.K. CONLEY

Art Unit

1726

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20,22-55,57 and 59-61 is/are pending in the application.
- 4a) Of the above claim(s) See Continuation Sheet is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22,28,32,35,38,41,44,47,50,53 and 59 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Continuation of Disposition of Claims: Claims withdrawn from consideration are 21,23-27,29-31,33,34,36,37,39,40,42,43,45,46,48,49,51,52,54,55,57,60,61.

DETAILED ACTION

1. Applicant's Amendment was received on 3/22/10.
2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action.

Election/Restrictions

3. Applicant's election of claim 59 in the reply filed on 10/8/10 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Therefore 60, 61 and 25 are withdrawn from further prosecution.
4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 59 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for $n=4-10$, does not reasonably provide enablement for n is not less than 1. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. Appropriate corrections are required.

5. Claim 59 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had

possession of the claimed invention. While the specification states $n=4-10$ does not provide support for $n=1, 2, 3, 11$, etc. Appropriate corrections are required.

Claim Rejections - 35 USC § 103

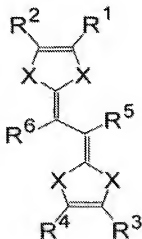
6. The rejections under 35 U.S.C 103(a), unpatentable over Zhang et al. and in view of Carlier et al. on claims 22, 25, 28, 32, 35, 38, 41, 44, 47, 50, 53 are maintained. The rejection is further clarified in view of Applicants amendments.
7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 22, 28, 32, 35, 38, 41, 44, 47, 50, 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. (US Patent 6,110,619) and in view of Carlier et al. (Publication Electrochimica Acta)
9. The Zhang et al. reference teaches a secondary battery (Column 1, Line 37) comprising a positive electrode, a negative electrode and an electrolyte where the positive electrode has an organo-sulfur structure (Column 2, Line 52). The negative electrode active material includes a carbon material and a lithium metal (Column 6, Lines 5-7). The positive electrode active material includes a metal oxide (Column 5, Line 63-64) and is mixed with a conductive material (Column 5, Lines 54-56). The

Zhang reference further discloses the electrolyte comprises a solvent where the anion and lithium cation diffuse in and the compound is capable of forming a coordinate bond with the lithium cation by oxidation-reduction reaction (Column 8, Lines 6-22). Some examples of electronically conductive polymers used in sulfur containing solid composite electrodes included polyacetylenes. However, the Zhang et al. reference does not disclose a structure represented by formula (1a). the Carlier et al. reference discloses a structure represented by the following formula:

(1a)



Where X = S, R₁ to R₄ are methyl or substituted methyl groups. R₅ and R₆ can be a polymer (Fig. 4). Furthermore, Carlier et al. discloses the compound induces fast electron transfer and can control relative stabilities of the different redox species (Conclusion; Pages 3269-3276). Therefore it would have been obvious to one of ordinary skill to use thiafulvalenes as disclosed by Carlier et al. into the secondary

battery with organic sulfur electrodes as disclosed by Zhang et al. to increase the electroconductivity. Finally it is known in the art that in a secondary battery the positive and negative electrodes can function interchangeable depending on whether the battery is charging or discharging and therefore the same compounds used for a positive electrode can be used for negative electrodes.

It is noted that claims 50 and 53 are product-by-process claims. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Since product is similar to that of the Applicant's, Applicant's process is not given patentable weight in this claim.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HELEN O.K. CONLEY whose telephone number is (571)272-5162. The examiner can normally be reached on Monday-Friday 8am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Helen O.K. Conley/
Examiner, Art Unit 1726